

IMPROVEMENT PLAN APPLICATION

(Required for water line, sanitary sewer, storm sewer and grading permits)

January 1, 2012

Revision 3



DEPARTMENT OF PUBLIC WORKS

200 North Second Street

Saint Charles, MO 63301

636-949-3237

Fax 636-940-4601

DEVELOPMENT NAME: _____

LOCATION: _____

APPLICANT / ENGINEER:

(Name)

(Address)

(Phone)

(Fax)

OWNER / DEVELOPER:

(Name)

(Address)

(Phone)

(Fax)

**DATE OF PLANNING AND ZONING APPROVAL
OF PRELIMINARY PLAT OR SITE PLAN:**

**DATE OF CITY COUNCIL APPROVAL OF
PRELIMINARY PLAT (IF APPLICABLE):**

IMPROVEMENT PLAN APPLICATION CHECKLIST

All Improvement Plans submitted for a permit shall address the following items on the plans for review by the Department of Public Works. Applicants shall check off each item provided on the plans. Attach a separate letter explaining reasons why any item below is not provided for on the plans.

An up-to-date version of the City of St. Charles, Missouri Code of Ordinances can be found at <http://www.stcharlescitymo.gov/Government/Ordinances/tabid/300/Default.aspx>

General Information

- ☐ Plans shall be submitted on 24" x 36" sheets (Preferred)
- ☐ Address all conditions of the Planning and Zoning Commission approval.
- ☐ All plan sheets shall be signed and sealed by a registered professional engineer.
- ☐ Show the locations of all existing entrances on both sides of the street, within 300 feet of any proposed entrance.
- ☐ Identify the property by lot lines and location, including dimensions; angles and size, correlated with the legal description of the property.
- ☐ Show natural features such as trees, streams, rivers, lakes, drains, topography, and similar features.
- ☐ Show existing manmade features such as buildings, structures, easements, existing utilities such as water and sewer lines etc., excavations, bridges, culverts and drains.
- ☐ Show location of the site and its geographic relation to neighboring properties showing all adjacent buildings and roads within 100 feet.
- ☐ Include existing topography a minimum of 50' outside of property lines.
- ☐ All sign locations and sizes must be approved separately. Remove any sign references from the plans. Any proposed signs located on plans should be noted that their size, type and location are to be approved under a separate submittal.
- ☐ Upon final approval a sealed set of plans shall be submitted in *.pdf form on a compact disk. Format of the *.pdf file shall be in accordance with City Requirements.

Cover Sheet Information

- ☐ Provide a location map of the site with north indicated.
- ☐ Indicate the USGS benchmark used for all survey data. All topographic data shall directly relate to USGS data.
- ☐ Provide a basis for bearing to establish how north was determined. Show north arrow on all plan sheets.
- ☐ List the City of St. Charles General Notes on the cover sheet.
 1. All improvements constructed herein shall comply with the Code of Ordinances of the City of St. Charles.
 2. If property is greater than 1 acre, a Land Disturbance permit from the Missouri Department of Natural Resources is required prior to commencing any demolition, clearing or construction on site. Provide copy of approval from the Department of Natural Resources to the Public Works Department. (Permit #_____)
 3. Siltation control shall be the responsibility of the contractor and shall be in accordance with the SWPPP plan. Additional siltation control may be required as directed by the City Engineer. (Code Section 510.090.2)
 4. When grading operations are completed or suspended for more than 30 days, permanent grass must be established to control erosion. (Code Section 510.090.4.a)

5. All mud and debris from construction site to be kept off of City maintained streets. Streets shall be swept twice daily. (Code Section 510.090.5)
6. Handicap spaces cannot have a grade in excess of 2% in any direction. (Code Section 400.705.B.4)
7. Handicap accessible routes and ramps cannot have a cross slope in excess of 2%.(Code Section 400.705.B.4)
8. All water main construction including valves, sleeves, meters, hydrants and fittings must conform to City of St. Charles Water Specifications.
9. When a sanitary sewer lateral crosses over a water line, a minimum vertical clearance of 18" shall be provided. If this clearance is not possible, then both the water line and the sewer line will be encased in concrete until there is a 10' horizontal clearance between the two lines.
10. All sanitary sewer construction must conform to the latest version of the Metropolitan St. Louis Sewer District's standards and specifications.
11. All street and sidewalk construction is to be per the latest St. Charles City standards.
12. Flowable fill backfill shall be used for all backfill on sewer trenches that are under City streets, from the top of the bedding material (6 inches above the pipe) to the surface, or to within one foot of grade in landscaped areas. (Code Section 510.280.4.a.1)
13. Earth backfill (meeting MSD standards) may be used outside of paved areas, from the top of the bedding material to the surface. Earth backfill should be placed in a maximum 8-inch loose lifts and shall be mechanically compacted to a minimum density of 85% maximum density as determined by the Modified AASHTO T-180 Compaction Test or 90% of maximum density as determined by the Standard Proctor Test AASHTO T-99.
14. All storm sewer design is to conform to the City of St. Charles design requirements. (Code Section 510.290)
15. All storm sewer construction is to be per the Latest Edition of the Metropolitan St. Louis Sewer District (MSD) Standard Construction Specifications for Sewers and Drainage Facilities. (Code Section 510.280)
16. For New Subdivisions Only:

All jetting shall be performed with a probe route on not greater than 7.5-foot centers with the jetting probe centered over and parallel with the direction of the pipe. Trench widths greater than 10 feet will require multiple probes every 7.5- foot centers. Trench backfill depths less than 8 feet in depth shall be probed to a depth extending to half of the trench backfill, but not less than 3 feet. Trench backfill greater than 8 feet in depth shall be probed to half the depth of the trench backfill but not greater than 8 feet. Jetting shall be performed from the low surface topographic point and proceed toward the high point, and from the bottom of the trench backfill towards the surface. The flooding of each jetting probe shall be started slowly allowing slow saturation of the soil. Water is not to be allowed to flow away from the ditch without first saturating the trench. Contractor shall identify the locations of surface bridging (the tendency for the upper backfill crust to arch over the trench rather than collapse and consolidate during the jetting process). The contractor shall break down the bridged areas using an appropriate method such as the wheels or bucket of a backhoe. When the surface crust is collapsed, the void shall be backfilled with the same material within the sunken/jetted area shall be compacted such that no further surface subsidence occurs. (Code Section 510.280)
17. All pipe joints and joints on new structures shall use City approved rubber compression type joints. Water stops are required at all points of connection not using rubber compression type joints such as connections to existing structures. (Code Section 510.280.6)
18. Concrete covers on structures will not be allowed. Only cast iron covers are permitted. (Code Section 510.280.5)
19. Brick storm and sanitary structures will not be allowed.
20. It shall be the responsibility of the contractor/developer to provide traffic control per the latest edition of the Manual of Uniform Traffic Control Devices.
21. All utilities shall be located underground.
22. All filled places under proposed storm and sanitary sewer and/or paved areas shall be compacted

to 90% of maximum density as determined by the Modified AASHTO T-180 Compaction Test or 95% of maximum density as determined by the Standard Proctor Test AASHTO T-99.

23. All filled places in proposed roads shall be compacted from the bottom of the fill up to 90% maximum density as determined by the Modified AASHTO T-180 Compaction Test or 95% of maximum density as determined by the Standard Proctor Test AASHTO T-99. All tests shall be verified by a soils engineer concurrent with grading and backfilling operations.

24. Grades cannot exceed a 3:1 slope. (Code Section 510.090.1)

25. Construction activities shall abide by the noise restrictions as outlines in Code Chapter 230.

- ☐ List all utility companies serving the development.
- ☐ Indicate how the site will be served by electric.
- ☐ All utilities must be bored under existing City of St. Charles streets unless approved otherwise by the City Engineer.
- ☐ Indicate on the plans any permits that have already been approved for this site.
- ☐ Include the list of conditions for approval of the Site Plan from the Planning & Zoning Board.

Other Agency Approvals

- ☐ Obtain any applicable permits and approvals from other regulating agencies. This to include, but not limited to, MoDOT, St. Charles County, MoDNR, FEMA, and adjoining municipalities. Approvals from other regulating agencies are required prior to improvement plan approval by the City of St. Charles.
- ☐ Provide proof of approval of improvements by the City of St. Charles Fire Department.
- ☐ Provide proof of approval of improvements by the Historic Landmarks Preservation and Architectural Review Board (HLPARB).

Right of Way/Easements/Vacations/Encroachments

All new easements required must be submitted on standard forms provided by the City, and must be recorded prior to construction.

- ☐ Provide a copy of all existing recorded easement (both within, off-site, and directly adjacent to) required with this development and show limits on the plan.
- ☐ Provide a copy of all proposed recorded easement (both within, off-site, and directly adjacent to) required with this development and show limits on the plan. (All new easements required must be recorded prior to construction)
- ☐ Provide a copy of all right of way warranty deeds required with this development and show limits on the plan.
- ☐ Provide a copy of any proposed, required or recorded cross access easements and show the limits on the plan.

Parking Lot (Code Chapter 400.705)

- ☐ Show number of parking spaces, including handicap spaces provided and number required. (Code Chapter 400.705)
- ☐ Show standard dimensions for parking spaces. Standard 9' x 17.5' (Code Section 400.700), handicap spaces 11' wide with 5' adjacent hatched area by 17.5' (Code Section 400.705.B). Provide elevations at the four corners of all handicap spaces.
- ☐ Show access aisle dimension. (Minimum 26'-6" wide- 2 way and 15'-3" one-way.) (Code Section 400.700)
- ☐ Show placement of handicap spaces as being the closest spaces to the building. Also, show placement of handicap sign indicating \$50-\$300 fine for illegally parking in handicap space. (Code Section 400.705)
- ☐ Show number of loading spaces required and show number provided. Show location of loading space (12' x 50'). (Code Section 400.740.A)
- ☐ Indicate pavement thickness and pavement detail for parking lot, including concrete curb detail.
- ☐ Indicate pavement detail for concrete approach. 7" concrete with 4" aggregate base on prepared subgrade is required for commercial approach to the right of way line.

- ☐ Show all setbacks and all existing easements.
- ☐ Provide a parking lot lighting diagram showing a minimum of .25 footcandle luminescence throughout the entire paved parking lot. (Code Section 400.700.F)

Water Distribution (Code Chapter 700)

- ☐ Show location and size of water service.
- ☐ Show placement of water meter and valve. (To be placed within Right of Way or easement)
- ☐ An irrigation system requires a separate meter and tap. (For commercial sites)
- ☐ Show placement of fire suppression line.
- ☐ Show location and size of existing water main that the water service lead is connecting into. Note: if the connection is within the City right of way, then show extent of excavation and show scope of work to repair the right of way, ie, limits of concrete removal and replacement. An excavation permit is required for work within right of way.
- ☐ Indicate that flowable fill is required for all backfill within water line trench under paved area (see Stormwater (Maintenance/Repairs requiring excavation to existing sewers)).
- ☐ All waterlines installed as part of the distribution system of St. Charles for any reason or application other than domestic use, shall be required to have a backflow prevention device installed on the water service in accordance with Missouri State Rule 10 CSR 60-11.010 and St. Charles City Code of Ordinances. All rules and regulations pertaining to the backflow prevention (cross connection) shall be followed as required, regulated and detailed by the State of Missouri, Department of Natural Resources. (Code Section 700.110)
- ☐ Show the water line crossing on the sanitary sewer profile sheet. Show concrete encasement where required.
- ☐ (Include when Water Main **Extensions** are proposed) A copy of the MoDNR permit for the system construction shall be provided prior to issuance of the City construction permit.
- ☐ Locate the nearest existing fire hydrant and any proposed hydrants. (Indicate on the plans if the hydrants are to be private)
- ☐ For public water main construction, obtain a permit. (Code Section 700.30)

Sanitary Distribution (Code Chapters 705 & 710)

- ☐ Show location and size of sanitary sewer laterals on plan and profile sheets. Please note a minimum 6" lateral is required.
- ☐ Show location of where the sanitary lateral connects into the public sewer. Show location and flowline elevations of the upstream and downstream structures. If sewer connection is within City right of way, then show extent of excavation and show scope of work to repair the right of way, ie, limits of concrete removal and replacement. If work is within right of way, an excavation permit will be required. Also, if sewer work is within the right of way, then flowable fill will be required. (Note: lateral cannot connect into a manhole)
- ☐ Provide a profile of any proposed public sanitary sewer showing flowlines, pipe size, top of structure elevation, proposed gradeline, limits of flowable fill backfill, existing gradeline, existing utility, utility crossings and overall scope of work.
- ☐ (Include when Sanitary Main **Extensions** are proposed) Upon receipt of comment letter from the City stating that the plans are approved, applicant shall submit a completed copy of the MoDNR application form for construction project, a check written to the MoDNR for the appropriate fee, the number of signed and sealed plan and specification sets required by the MoDNR form plus one set for the City, two copies of the Engineering Report required by the MoDNR form, and two copies of the DGLS geologic evaluation required by the MoDNR form. The City will then send the Continuing Authority letter to the engineer to be forwarded to MoDNR.
- ☐ Provide a copy of the sanitary approval letter from MoDNR.
- ☐ Based on upstream zoning, estimate the proposed daily sanitary flow and provide calculations indicating average daily flow, peak flow and velocities within the proposed sanitary sewer and the downstream sewer.

- ☐ Indicate if pretreatment is required based on city codes. (Code Chapter 710)

Streets and Sidewalks (Code Chapters 505 & 405)

- ☐ All entrance approaches are to be 7" concrete with 4" Type I Aggregate Base.
- ☐ Show typical joint details and spacing for construction of all public streets.
- ☐ Minimum Grade at centerline of public roads allowed is in accordance with (Code Section 405.150.L)
- ☐ For subdivision development, traffic calming must be utilized which includes traffic calming measures being spaced a minimum of 400' or show intersections at a minimum spacing between intersection at 400'. Traffic calming measures include: raised intersections, neighborhood traffic circles, chicanes, neckdowns, center island narrowings and chokers as identified in the informational report entitled "Traffic Calming State of The Practice" by the Institute of Transportation Engineers (ITE) or as directed by the Director of Public Works. (Code Section 405.150.Z).
- ☐ All the corners at any intersecting streets, embracing the full width of the sidewalks thereof, shall bear a uniform elevation, except when the contour of the streets or other conditions necessarily require otherwise. Whenever it shall be deemed expedient not to bring all the corners of any intersection to the same level, then the elevation at each corner of such intersection shall be given. (Code Section 505.520)
- ☐ Show curb radii for all Minor Streets. A minimum radius is 32' (Code Section 405.150.U).
- ☐ Show right of way width and label all road classifications. (Code Section 405.150.L).
- ☐ Provide roadway profile for each street within development. Show sidewalks along streets unless not required by ordinance. (Code Section 405.150.L).
- ☐ Provide detectable warning surfaces for all curb ramps.
- ☐ Include City of St. Charles Standard Typical Section for each proposed roadway section.
- ☐ Include warping detail for cul-de-sacs and intersections.
- ☐ Provide underdrains across the street at all curb inlet locations. Provide a detail.
- ☐ Private streets are not to be approved nor shall public improvements be approved for any private street. (Code Section 405.150.J).
- ☐ Prior to approval of the subdivision plat, a surety bond, an irrevocable letter of credit, cashier's check, or an escrow agreement is required for 100% of the cost of all public improvements including streets. Prior to submittal of letter of credit or surety bond, the developer must first submit an estimate of the construction cost of the public improvements (Code Section 405.150.A).
- ☐ Show location of street lighting. The minimum requirement for street lighting facilities shall be one 9,500 lumen high-pressure sodium light at each intersection, but not further than 200 feet within or abutting the subdivision. Light standards shall be approved by the City's Public Works Director or his or her designee.
- ☐ Prior to approval of the development, street lighting connection fees shall be paid by the developer.

Stormwater (Maintenance/Repairs requiring excavation to existing sewers) (Code Section Chapter 510)

- ☐ Obtain an excavation permit.
- ☐ Indicate on plans how traffic control will be handled during construction.
- ☐ Show pavement replacement limits, thickness and type of pavement removal. Note: all concrete replacement due to storm sewer or sanitary sewer repair should be removed and replaced to the nearest joint.

Stormwater (New Construction) (Code Section Chapter 510)

- ☐ Label all storm sewers with regards to size, type and classification, i.e. 15" Reinforced Concrete Pipe, Class III.
- ☐ Provide profiles of all storm sewer construction. Show slope of sewers, distance between structures, type of structure, utilities in profile view, and type of backfill (i.e. flowable fill within the right of way).

- ☐ Show a typical pipe cross section view of the storm sewer, backfill, and trench width. (All pipes shall be bedded in MSD Type 1 or Type 2 bedding unless otherwise directed by the engineer. (Code Section 510.280.3)
- ☐ Provide storm sewer hydraulic calculations for the 15 year, 20 minute storm on all proposed pipes, provide proof of downstream capacity. Include the hydraulic grade line on the storm sewer profile drawings.
- ☐ Development along natural watercourses shall have residential lot lines, commercial or industrial improvements, parking areas and driveways setback a minimum of 25 feet from the top of the existing stream bank. The section of land between a natural watercourse and lot lines shall be designated as common ground and drainage easement to be maintained by the trustees of the subdivision within all types of residential developments. All developments shall maintain a setback minimum of 50 feet from the top of the existing stream bank and any building or structure. Commercial and industrial areas shall have creek areas dedicated as drainage easements.

Detention Facilities (Code Section 510.310)

- ☐ Add a note on the cover sheet indicating how the City stormwater detention requirements will be met.
- ☐ If detention is required for the development, a complete detention report is to be submitted with the improvement plans.
- ☐ Provide calculations showing current (pre-developed) and post developed flows for each required storm event in each drainage area. Note: The 50 year developed runoff must be less than the 25 year existing runoff (Code Section 510.290.3.d).
- ☐ Provide Elevation vs Discharge tables or curves for all storm frequencies, signed, sealed and dated by a registered engineer in the state of Missouri (Detention Facilities)
- ☐ Provide Elevation vs Storage tables or curves for all storm frequencies signed, sealed and dated by a professional engineer in the state of Missouri (Detention Facilities)
- ☐ Show inflow calculations and data from all storm frequencies, signed, sealed and dated by a registered professional engineer in the state of Missouri (Detention Facilities)
- ☐ Provide hydraulic gradeline calculations for pipes entering and leaving basins for all frequencies, signed sealed and dated by a registered professional engineer in the state of Missouri.
- ☐ Include a Geotechnical report for design of detention basin earth fills (if required by the City Engineer) This report should be signed, sealed and dated by a registered engineer in the state of Missouri.
- ☐ Show flood areas and elevations on 100 year, 20 minute and 100 year, 24 hour storm event on the development plan. Also, provide for an overland flow path for cases in which the basin is overtopped.
- ☐ Provide cross sections of the detention facility adequate to determine the volume of the detention facility.
- ☐ Provide approvals from the United States Army Corps of Engineers and Missouri Department of Natural Resources.
- ☐ Provide flood and creek bank studies signed, sealed and dated by a registered professional engineer.

Grading

- ☐ Show the 25' x 50' temporary gravel wash down area located near the construction entrance and indicate on the plans that all trucks must be washed down prior to leaving the site.
- ☐ Show spot elevations in the parking lot to clarify proposed drainage.
- ☐ Show existing topography and grade of the premises at a contour interval of not more than two feet and the proposed final contour and finished grade elevations at intervals of not more than two feet; except, that whenever the existing grade is extremely steep and hilly, the contour intervals may be not more than five feet.
- ☐ Provide earthwork totals including total volumes of cut and fill in cubic yards. A grading permit is required for any grading operation wherein a minimum of 500 cubic yards of soil is being moved. A grading performance bond is required for any grading operation moving more than 3,000 cubic yards.

- ☐ All low places whether on-site or off-site should be graded to allow drainage (this may be accomplished with temporary ditches). Provide copies of signed off-site easements needed to accomplish this.

Storm Water Pollution Prevention Plan (SWPPP) (Phase I & II)

- ☐ A SWPPP, including a Storm Water Management Plan and Erosion/Sedimentation Control Plan stamped by a professional engineer per Chapter 3 of Protecting Water Quality, January 2000 by the Missouri Department of Natural Resources, is required for all developments, regardless of size.
- ☐ Show a 25' x 50' temporary gravel wash down area located near the construction entrance and indicate on the plans that all trucks must be washed down prior to leaving the site.
- ☐ Show spot elevations in the parking lot to clarify proposed drainage.
- ☐ Show existing topography and grade of the premises at a contour interval of not more than two feet and the proposed final contour and finished grade elevations at intervals of not more than two feet; except, that whenever the existing grade is extremely steep and hilly, the contour intervals may be not more than five feet.
- ☐ Provide earthwork totals including total volumes of cut and fill in cubic yards. A grading permit is required for any grading operation wherein a minimum of 500 cubic yards of soil is being moved. A grading performance bond is required for any grading operation moving more than 3,000 cubic yards.
- ☐ All low places whether on-site or off-site should be graded to allow drainage (this may be accomplished with temporary ditches). Provide copies of signed off-site easements needed to accomplish this.
- ☐ Show locations of all proposed temporary and permanent BMP's.

Trees and Landscaping

- ☐ Show limits of the existing treeline.
- ☐ Provide Landscape Plan that meets City requirements, and follows the Tree Preservation Ordinance. (Code Sections 400.630 - 400.650)

Flood Damage Prevention (Code Section 410.010)

- ☐ Depict the appropriate flood hazard zones as shown on Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) and reference the applicable FIRM panel number and date.
- ☐ Indicate on plans the proximity of the proposed development to the floodplain or floodway.
- ☐ If development (subdivision or commercial development) is adjacent to a creek, provide hydraulic data for the creek showing the 100 year flood elevation and show the low floor and low sill elevations on the adjacent structures.
- ☐ Delineate wetlands subject to United States Army Corps of Engineers regulations. Appropriate documentation of coordination with the COE shall be provided.
- ☐ All Development shall be setback at least 25' from the top of any creek and structures shall have a minimum 50' setback.
- ☐ Obtain a Floodplain Development Permit and provide approval from Community Development for any work within a floodplain or floodway.

Please Note:

- Any signage to be placed on the subject property requires a separate sign permit.
- Any business occupying the site requires approval of a Business License.
- The checklist is provided as a guideline to use when preparing improvement plans for submittal to the City and is not meant to be all inclusive. The owner/developer agrees that the preliminary site plan is subject to change pending future site plan submittal and review. The owner/developer understands that this is a preliminary site plan and items such as right-of-way, easements, utility locations, grading, etc. are susceptible to change pending site improvement plan review and approval.

- A completed and signed copy of this checklist must accompany the initial Improvement Plan submittal.
- Submit a minimum of 3 sets of signed and sealed plans for each Improvement Plan submittal.

Applicant Signature

Date